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ANATOMY

FOR THE USE OF ARTISTS.

BY

RICHARD LEWIS BEAN,

LATE HOUSE-SURGEON AT KING'S COLLEGE
AND CHARING-CROSS HOSPITALS.

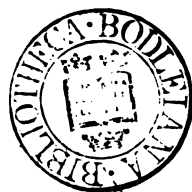
ILLUSTRATED BY SEVERAL PLATES.

LONDON:

HENRY RENSHAW, 356, STRAND.

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1243.



TO

WILLIAM FERGUSSON, F.R.S.E.

**PROFESSOR OF SURGERY AT KING'S COLLEGE, LONDON,
AND SURGEON TO KING'S COLLEGE HOSPITAL,**

THE FOLLOWING PAGES

Are Inscribed,

WITH EVERY SENTIMENT OF RESPECT,

AND AS

A SLIGHT ACKNOWLEDGMENT OF HIS KINDNESS TO

THE AUTHOR.

P R E F A C E.

THAT a certain knowledge of anatomy is absolutely necessary to form the accomplished artist, is a fact acknowledged by all ; that the most eminent have possessed it, is sufficiently attested by their works. The acquirement of this knowledge, although not necessarily extensive, is to the student, perhaps, one of the most difficult of his preliminary studies. The number of excellent anatomical works, and the various methods of explanation adopted in them, afford ample opportunity for him to select such as may appear most useful, each having some particular feature to recommend it. He will, however, find none in which an attempt has been made to afford assistance where it is most likely to be requisite, as they are supposed to be studied by those previously familiar with most of the names and terms employed. To become acquainted with these is cer-

tainly a most essential and generally difficult part of the subject. In order, therefore, to assist the memory as much as possible, the names of the muscles and bones in the plates are referred to by their initials, which I have considered preferable to numbers or letters; for example, the student will be more likely to remember the name of Sartorius or Rectus when he sees the letter S or R, than by the old system of reference to letters, or such figures as 1, 2, or 3.

I am well aware of the difficulties which attend the composition of a work intended to teach, by a new method, so important a subject. On this account, all matter which would tend to complicate has been omitted. A minute description of the bones and other parts, if introduced, would necessarily have augmented the size and price of the work, extending it beyond the limits originally proposed, without benefiting those whose studies it is intended to facilitate. The author, therefore, presents the work in its present form, trusting it will be found to render the subject in a manner at once sufficient and concise.

R. L. B.

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INTRODUCTION.

THE more we examine the human frame, the more we become convinced of the excellence and beauty of its mechanism, and of its superiority to the most elaborate works of art ; to examine its parts, and contemplate how each is adapted to its particular purpose—how, in the smallest member, resides not only the power of performing its functions, but also of supplying its own wants, and repairing its own injuries. One might imagine such a consummate structure proof against the attacks of age and disease, to which it is subject, were he not convinced, by experience, to the contrary. How true it is, that in the midst of life we are in death. To see the object of our admiration, the eyes sparkling with intelligence, features enlivened by wit, the most graceful figure, or the strongest, who never knew the qualms of sickness or the torture of dis-

ease, in an instant struck with death without apparent cause—sensation and motion are gone—the eyes lose their lustre, the lips and cheeks their colour, and the body its warmth : it changes blue, green, and black : the flesh becomes a noxious mass, giving off the most offensive gases ; and ultimately nothing is left but a few earthly and saline particles, the rest being dispersed to form new combinations, and food for other beings.

“ Beyond is all abyss—
Eternity, whose end no eye can reach !”

The human body may be defined as a structure, composed of bones and muscles, with their appendages ; vessels for the concoction and circulation of the fluids ; with nerves, for the distribution of the vital stimulus.

The bones generally are hollow, compact only in such places as are required to resist great force : by this means they are light, without loss of strength, their power of resisting fracture being proportionate to their diameters. They preserve proportion to the different parts of the frame, and serve as armour to protect the viscera. Thus we find the skull and vertebræ covering the brain and spinal cord, the ribs guarding the heart, lungs, and other vital parts.

To put the frame in motion, muscles are used, which are of various shapes, and act in different

ways ; they are mostly attached to the bone, between the fulcrum and weight, as in levers of the third kind,—of this the biceps may be taken as an example. The first kind of lever, where the force is at one end, and the fulcrum in the middle, is frequently used, as in the triceps of the arm. The second class of lever is seldom employed, as where the weight of the body is lifted by the action of the muscles of the calf upon the heel ; the weight is in this instance between the fulcrum and the power.

The fluid necessary to the nutrition of the body having been separated from food by the digestive process, is conveyed through vessels into the circulation, and forming part of the blood, is then carried to the remotest parts of the body.

The glands, as the liver and salivary glands, separate fluids from the blood, some of which are necessary for digestion ; others, as the kidneys, separate those which would be injurious were they to continue in the circulation. This is beautifully exemplified in some diseases. Respiration is of great importance ; by its means the blood is rendered fit for nutrition, the animal heat is generated and distributed with the blood, helping to maintain that temperature which is necessary to life. But the frame, so admirably constructed for motion, would be motionless were it not for the nervous system,—the brain, the seat of the intelligent principle.

From this organ numerous white medullary cords are distributed to every part of the body ; some proceed directly from the brain to particular parts ; the majority, contained in the vertebral canal, supply the extremities and greatest part of the body ; the sensation communicated through them makes us acquainted with what passes around us ; they also apprise us of changes which take place in our own bodies. Thus pain warns us of disease or injury ; hunger, thirst, and fatigue, tell us that our bodies require refreshment or repose.

The sense of touch is perhaps the only one which is common to all animals ; and the others are generally considered as modifications of it. The seat of this sense resides in the extremities of the nerves, as at the finger ends. The other senses are placed in the head, nearer the brain.

The passions are of two kinds,—the animal, and the social. The former have the same end as instinct, and lead us to act according to the laws of nature. The latter are the social wants carried to excess, as ambition, love, hatred, and revenge.

In the expression of the passions, the muscles of the face perform a most important part ; and perhaps it may be well to mention their action in some of them, as it particularly concerns the artist. When the countenance expresses *scorn*, the corrugator supercilii draws the eyebrows together, their

outer part being elevated by the occipito-frontalis. The levator labii superioris alæque nasi draws the upper lip and alæ of the nose strongly upwards, whilst the under lip is raised against the upper one by the levator labii inferioris, and the angles of the mouth are drawn down by the depressor anguli oris.

In *compassion*, the mouth is slightly open, the upper lip and alæ of the nose are raised by the levator labii superioris alæque nasi, and the brows knit by the corrugator supercilii.

In *rapture*, the eyebrows are raised by the occipito-frontalis, the mouth is slightly open, and its angles elevated by the levator anguli oris.

In *despair*, the lower lip is depressed by the depressor labii inferioris, the nostrils and upper lip are strongly drawn up by the levator labii superioris alæque nasi, and the brows strongly contracted by the corrugator supercilii.

In *laughter*, the occipito-frontalis raises and separates the eyebrows, the zygomatic and levator anguli oris muscles draw the corners of the mouth upwards and outwards, whilst the levator labii superioris alæque nasi is slightly in action. In *excessive* laughter, those fibres of the platysma-myoides, called risores santorini, which are inserted into the integuments about the corners of the mouth, draw them more directly outwards, and the eyelids are closed by the orbicularis palpebrarum.

In *weeping*, the upper lip and nostrils are elevated by the levator labii superioris alæque nasi, the mouth closed, and its corners drawn down by the depressor anguli oris, the skin being thrown into wrinkles on the lower part of the cheek by the platysma-myoides ; the brows are drawn strongly together by the corrugator, whilst the orbicularis palpebrarum closes the eyelids.

In *terror*, the eyes are wide open, the outer part of the brows are elevated by the occipito-frontalis, and their inner part drawn together by the corrugator supercilii, the mouth is open, the nostrils and upper lip are drawn up by the levator labii superioris alæque nasi, and the lower lip depressed by its muscle, the depressor labii inferioris.



PLATE I.

Front View of the First Layer of Muscles.

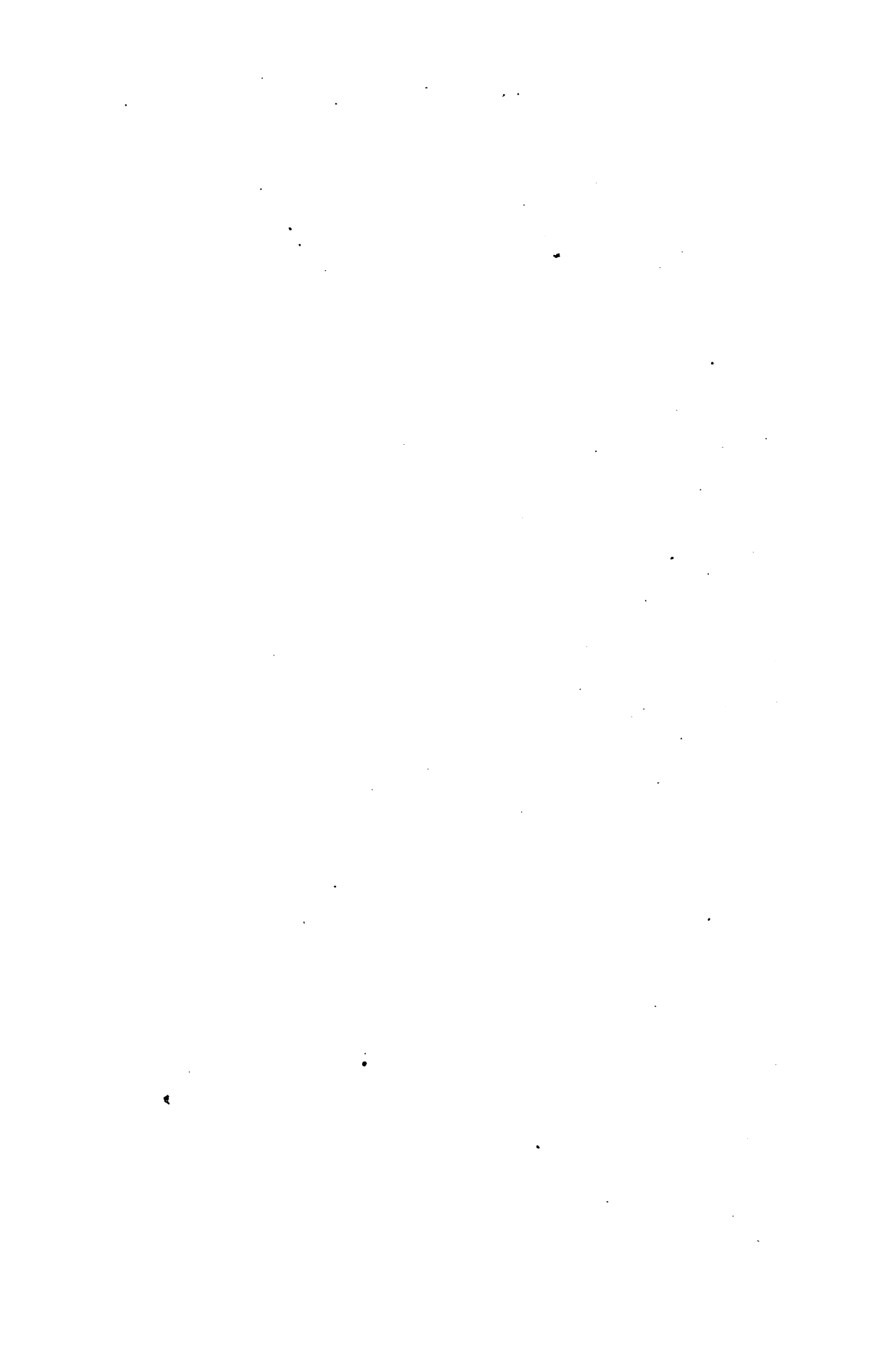
S.M.	Sterno Mastoideus.	ECRL&B.	Extensor Carpi Radialis Longior & Brevior.
P.M.	Pectoralis Major.	ECU.	Extensor Carpi Ulnaris.
S.	Serratus Magnus.	EP.	The Extensors of the Metacarpal bone and first Phalanx of the thumb.
LD.	Latissimus Dorsi.	AI.	Abductor Indicis.
O.	Obliquus Externus.	AMD.	Abductor Minimi Di- giti.
R.	Rectus.	TV.	Tensor Vaginæ Femoris.
C.	Spermatic Cord going to the Testicle.	S'.	Sartorius.
D.	Deltoides.	RF.	Rectus Femoris.
TM.	Teres Major.	VE.	Vastus Externus.
CB.	Coraco Brachialis.	VI.	Vastus Internus.
B.	Biceps.	G.	Gracilis.
BA.	Brachialis Anticus.	P.	Pectinæus.
T ¹	The first, or long head of the Triceps.	AL.	Adductor Longus.
T ³	The third-internal, or short head of the Triceps.	TA.	Tibialis Anticus.
PRT.	Pronator Radii Teres.	EC.	Extensor Digitorum Communis.
FCR.	Flexor Carpi Radialis.	PL.	Peroneus Longus.
PL.	Palmaris Longus.	G.	Gastrocnemius.
FCU.	Flexor Carpi Ulnaris.	S.	Soleus.
SRL.	Supinator Radii Longus.		

PLATE II.

*Shewing the Origin and Insertion of the First Layer of Muscles
on the Bones.*

SM.	Sterno-Mastoideus.	SRL.	Supinator Radii Longus.
P.	Pectoralis Major.	ECRL.	Extensor Carpi Radialis Longus.
LD.	Insertion of the Latissimus Dorsi.	ECRB.	Extensor Carpi Radialis Brevis.
O.	Obliquus Externus.	TVF.	Tensor Vaginæ Femoris.
R.	Rectus Abdominis.	S.	Sartorius.
D.	Deltoides.	RF.	Rectus Femoris.
T.	Teres Major.	VE.	Vastus Externus.
TM.	Teres Minor.	VI.	Vastus Internus.
CB.	Coraco Brachialis.	G.	Gracilis.
B.	Biceps.	AL.	Adductor Longus.
BA.	Brachialis Anticus.	AB.	Adductor Brevis.
T ¹ .	The first, or long head of the Triceps.	AM.	Adductor Magnus.
T ³ .	The third, or short head of the Triceps.	$\frac{1}{2}$ M.	Semi Membranosus.
PRT.	Pronator Radii Teres.	$\frac{1}{2}$ T.	Semi Tendinosus.
FCR.	Flexor Carpi Radialis.	TA.	Tibialis Anticus.
PL.	Palmaris Longus.	EDL.	Extensor Digitorum Lon- gus.
FCU.	Flexor Carpi Ulnaris.	ELP.	Extensor Longus Pollicis.
FS.	Flexor Sublimis.	Per L.	Peroneus Longus.
		PB.	Peroneus Brevis.
		PT ³ .	Peroneus Tertius.





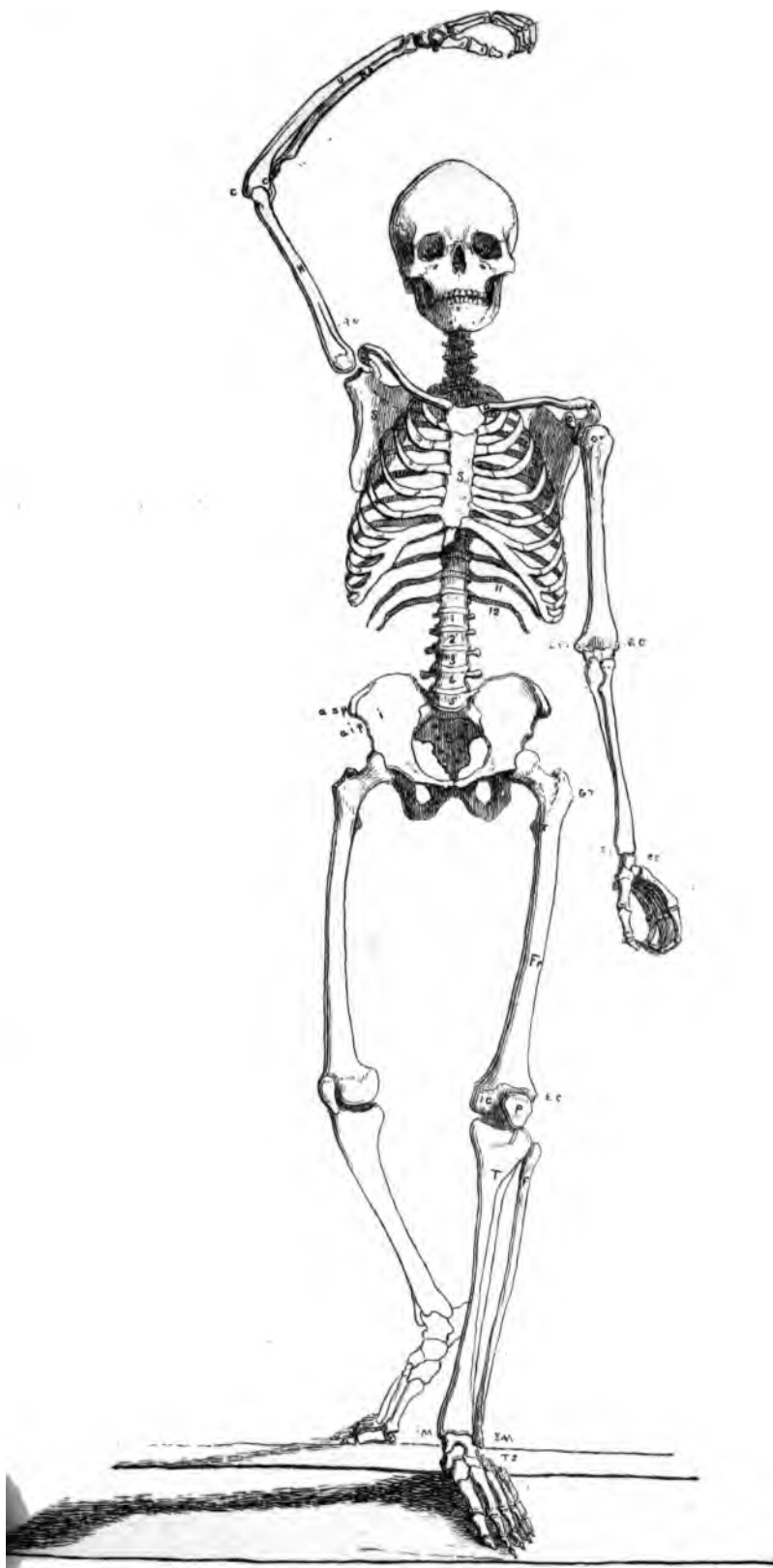


PLATE 3.

PLATE III.

Front View of the Skeleton.

1 to 5.	The five lumbar vertebræ.	cs.	The carpus.
{ R.	The Ribs.	S.	The Sacrum.
{ 11, 12.	The floating ribs.	{ I.	The Ilium.
S.	The Sternum.	{ asp.	Its anterior superior spin-
C.	The Clavicle.		ous process.
{ S.	The Scapula.	{ aip.	Its anterior inferior process.
{ c.	Its coracoid process.	{ F ^r .	The Femur.
{ a.	Its acromion process.	{ G T.	Great Trochanter.
{ H.	The Humerus.	{ L T.	Lesser Trochanter.
{ G ^t .	Great trochanter.	{ I C.	Internal Condyle.
{ Bg.	Bicipital groove.	{ E C.	External Condyle.
{ I c.	Internal condyle.	P.	Patella.
{ E c.	External condyle.	{ T.	Tibia.
{ R ^s .	Radius.	{ I M.	Internal Malleolus.
{ Sp.	Styloid process.	{ F.	The Fibula.
{ U.	The Ulna.	{ E M.	External Malleolus.
{ O.	Olecranon process.	ts.	The tarsus.
{ C.	Coronoid process.		

PLATE IV.

Back View of the First Layer of Muscles.

OF.	Occipito Frontalis.	EP.	The Extensors of the Metacarpal bone and first Phalanx of the thumb.
T.	Trapezius.	2.	Shews the interval between the tendons of these muscles and the extensor of the second phalanx of the thumb.
LD.	Latissimus Dorsi.		
O.	Obliquus externus abdominis.	AI.	Abductor Indicis.
D.	Deltoideus.	AMD.	Abductor Minimi Digiti.
TM.	Teres Major.	VE.	Vastus Externus.
IS.	Infra Spinatus.	G.	Gracilis.
B.	Biceps.	AM.	Adductor Magnus.
BA.	Brachialis Anticus.	G.	Glutæus Maximus.
T.	Triceps.	GM.	Glutæus Medius.
T ¹ .	Its first, or long head.	BC.	Biceps Cruris.
T ² .	Its second external head.	$\frac{1}{2}$ T.	Semi Tendinosus.
PRT.	Pronator Radii Teres.	$\frac{1}{2}$ M.	Semi Membranosus.
FCR.	Flexor Carpi Radialis.	PB&L.	Peroneus Brevis and Longus.
FCU.	Flexor Carpi Ulnaris.	G.	Gastrocnemius and Soleus, forming together the tendo Achillis going to the heel.
SRL.	Supinator Radii Longus.	S.	
ECRL&B.	Extensor Carpi Radialis Longus and Brevis.	P.	Plantaris.
EC.	Extensor Communis.		
ECU.	Extensor Carpi Ulnaris.		



PLATE -

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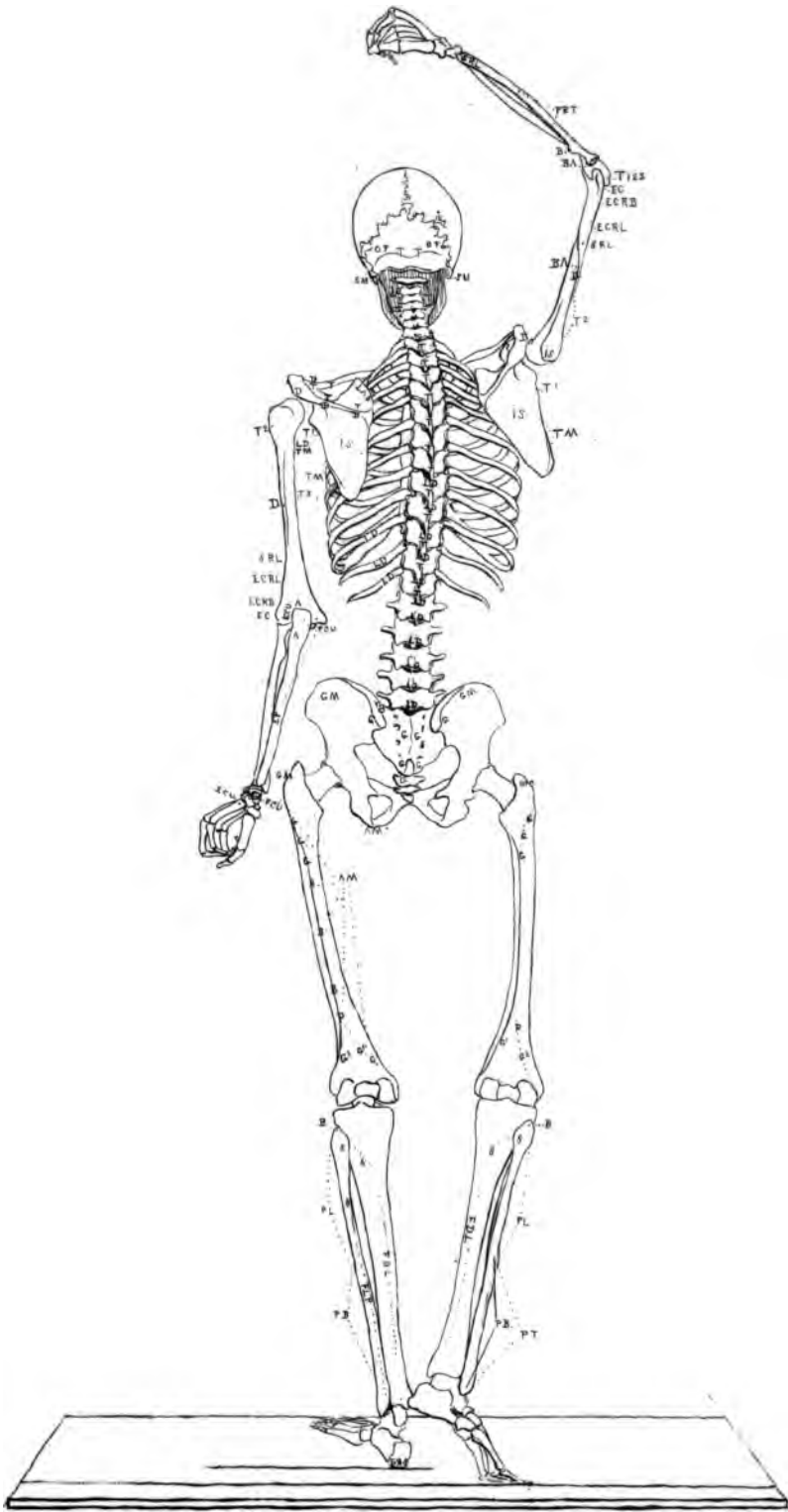


PLATE 5.

MANHART Lith. Printers.

PLATE V.

*Shewing the Origin and Insertion of the First Layer of Muscles
on the Bones.*

OF.	Occipito Frontalis.	EC.	Extensor Communis.
SM.	Sterno-Mastoideus.	ECU.	Extensor Carpi Ulnaris.
T.	Trapezius.	A.	Anconæus.
LD.	Latissimus Dorsi.	EP.	Extensors of the thumb.
D.	Deltoideus.	A M.	Adductor Magnus.
T M.	Teres Major.	G.	Glutæus Maximus.
IS.	Infra Spinatus.	G M.	Glutæus Medius.
B.	Biceps.	B.	Biceps Cruris.
BA.	Brachialis Anticus.	$\frac{1}{2}$ T.	Semi Tendinosus.
T ¹ .	First, or long head of the Triceps.	$\frac{1}{2}$ M.	Semi Membranosus.
T ² .	Second, or external head of the Triceps.	P L.	Peroneus Longus.
T ³ .	Third, or short head of the Triceps.	P B.	Peroneus Brevis.
T ¹²³ .	Insertion of the conjoined heads of the Triceps.	P T.	Peroneus Tertius.
P R T.	Pronator Radii Teres.	G ¹ .	First internal, or long head of Gastrocnemius.
FCU.	Flexor Carpi Ulnaris.	G ² .	Second external, or short head of Gastrocnemius.
S R L.	Supinator Radii Longus.	S.	Solæus.
EC R L.	Extensor Carpi Radialis Longus.	G & S.	Insertion of Gastrocnemius and Solæus by tendo Achillis into the Os Calcis.
EC R B.	Extensor Carpi Radialis Brevis.	P.	Plantaris.
		F D L.	Flexor Digitorum Longior.
		F L P.	Flexor Longus Pollicis.

PLATE VI.

Back View of the Skeleton.

<p>O. The Occipital bone.</p> <p>t. Tubercle.</p> <p>tr. Transverse ridge.</p> <p>P. Parietal bone.</p> <p>1 to 7 The seven Cervical vertebrae.</p> <p>1 to 12. The twelve Dorsal vertebrae.</p> <p>1 to 5. The five Lumbar vertebrae.</p> <p>sp. Spinous processes.</p> <p>tp. Transverse processes.</p> <p>C. The Clavicle.</p> <p>S. Scapula.</p> <p>b. Its base.</p> <p>sc. Superior costa.</p> <p>i. Inferior costa.</p> <p>gc. Glenoid cavity.</p> <p>ap. Acromion process.</p> <p>H. Humerus.</p> <p>gt. Great trochanter.</p> <p>bg. Bicapital groove.</p> <p>ec. External condyle.</p> <p>ic. Internal condyle.</p>	<p>R. Radius.</p> <p>sp. Styloid process.</p> <p>t. Tubercle.</p> <p>U. Ulna.</p> <p>o. Olecranon process.</p> <p>S. The Sacrum.</p> <p>I. Ilium.</p> <p>I^m. Ischium.</p> <p>P. Pubis.</p> <p>f. Femur.</p> <p>gt. Great trochanter.</p> <p>lt. Lesser trochanter.</p> <p>itl. Inter-trochanteric line.</p> <p>la. Linea aspera.</p> <p>ic. Internal condyle.</p> <p>ec. External condyle.</p> <p>T. Tibia.</p> <p>ht. Head of the tibia.</p> <p>ol. Oblique line.</p> <p>im. Internal malleolus.</p> <p>F. Fibula.</p> <p>hf. Head of the fibula.</p> <p>em. External malleolus.</p> <p>O.C. Os Calcis.</p>
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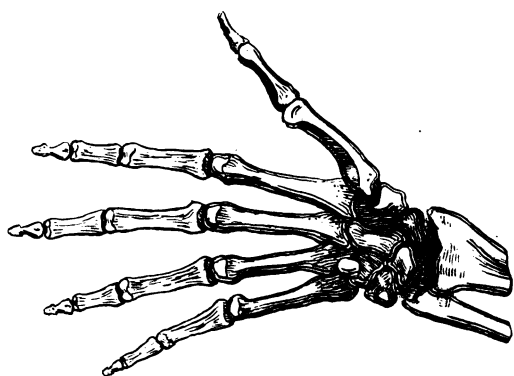


FIG 3.

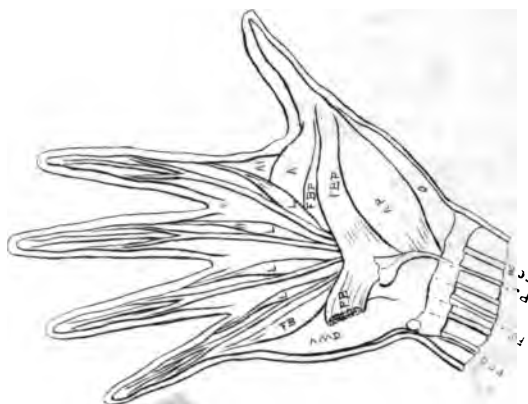


FIG 2.

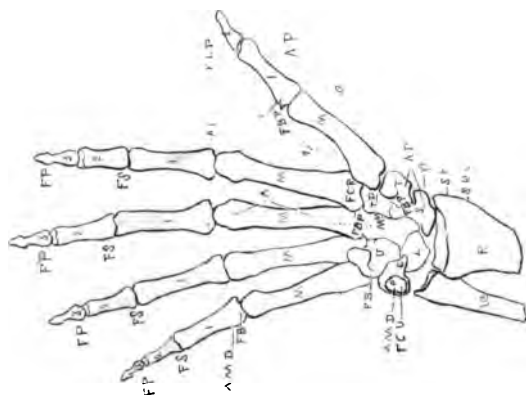


FIG 1.

PLATE VII.

FIG. 1.

*The Palm of the Hand, with the Origin
and Insertion of the Muscles.*

Forming the Carpus.	{	R.	Radius.
	{	SP.	Styloid process.
		U ^a .	Ulna.
	{	S.	Scaphoid bone.
	{	L.	The Lunar bone.
	{	C.	Cuboid bone.
	{	P.	Pisiform bone.
	{	T.	The os Trapezium.
	{	T ^a .	Trapezoid bone.
	{	M ^m .	The os Magnum.
	{	U.	Unciform bone.
		M.	The five Metacarpal bones.
		1 2 3	The phalanges of the fingers, the thumb having only two.
		FCR.	Flexor Carpi Radialis.
		FCU.	Flexor Carpi Ulnaris.
		FS.	Flexor Sublimis Digitorum perforatus.
		FP.	Flexor Profundus Digitorum perforans.
		FLP.	Flexor Longus Pollicis.
		SRL.	Supinator Radii Longus.
		AP.	Abductor Pollicis.

O. Opponens, or Flexor ossis
metacarpi pollicis.

FBP. Flexor Brevis Pollicis.

A. Adductor Pollicis.

AI. Abductor Indicis.

AMD. Abductor Minimi Digiti.

FB. Flexor Brevis Minimi Digiti.

FIG. 2.

*Outline of the Muscles and Tendons on
the Palm of the Hand.*

FCR. Flexor Carpi Radialis.

PL. Palmaris Longus.

FCU. Flexor Carpi Ulnaris.

FS. Flexor Sublimis.

AP. Abductor Pollicis.

O. Opponens, or Flexor ossis
metacarpi pollicis.

FBP. The two heads of the Flexor
Brevis Pollicis.

A. Adductor Pollicis.

PB. Palmaris Brevis.

AI. Abductor Indicis.

AMD. Adductor Minimi Digiti.

FB. Flexor Brevis Minimi Digiti.

L. Lumbricales.

FIG. 3.

The Palm of the Hand, without letters.

PLATE VIII.

FIG. 1.

*The Dorsum of the Foot, with the Origin
and Insertion of the Muscles.*

Forming the Tarsus.	{	T.	Tibia.
		F.	Fibula.
		C.	The os Calcis.
		A.	The Astragalus.
		S.	The Scaphoid.
		C ^d .	The Cuboid.
		C ¹ .	The External Cuneiform.
		C ² .	Middle Cuneiform.
		C ³ .	Internal Cuneiform.
		M.	Five Metatarsal bones.
123.	The phalanges of the toes, the great toe having only two.		
ELD.	Extensor Longus Digitorum.		

ELP. Extensor Longus Pollicis.

PT. Peroneus Tertius.

EDB. Extensor Digitorum Brevis.

AP. Abductor Pollicis.

AMD. Abductor Minimi Digiti.

FIG. 2.

*Outline of the Muscles and Tendons on
the Dorsum of the Foot.*

TA. Tibialis Anticus.

ELD. Extensor Longus Digitorum

ELP. Extensor Longus Pollicis.

PT. Peroneus Tertius.

EBD. Extensor Brevis Digitorum.

AP. Adductor Pollicis.

AMD. Abductor Minimi Digiti.

FIG. 3.

The Dorsum of the Foot, without letters.

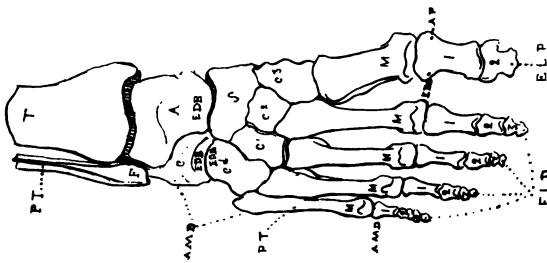


FIG. 1.

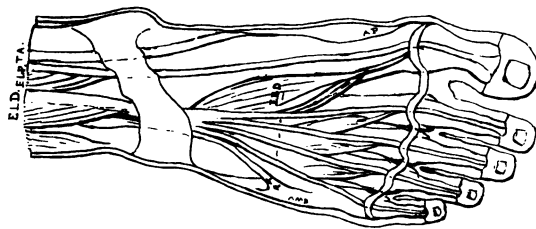


FIG. 2.



FIG. 3.

PLATE 8.

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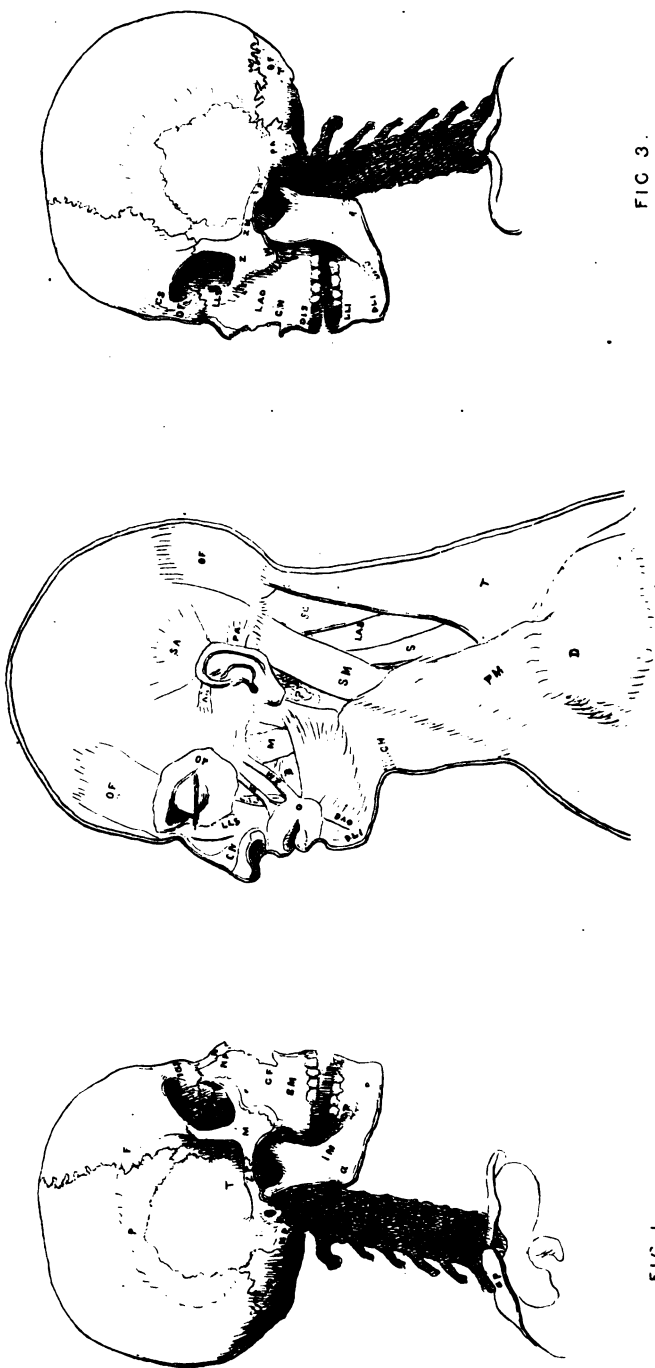


FIG 2
PLATE 9.

SCOTT HARRIS, LITH. 1886.

PLATE IX.

FIG. 1.

Side View of the Bones of the Head and Face.

- { F. Frontal bone.
- { iap. Internal angular process.
- { P. Parietal bone.
- { T. Temporal bone.
- { MP. Mastoid Process.
- ZP. Zygomatic Process.
- M. Malar, or cheek bone.
- O. Orbit.
- N. Nasal bone.
- { SM. Superior Maxillary bone.
- { CF. Canine Fossa.
- { NP. Nasal Process.
- { IM. Inferior Maxillary bone.
- { A. Angle.
- { OR. Oblique Ridge.
- AP. Acromion Process of Scapula.

FIG. 2.

Side View of the Muscles of the Head, Face, and Neck.

- OF. Occipito Frontalis.
- SA. Superior Auris.
- A. Anterior Auris.
- PA. Posterior Auris.
- OP. Orbicularis Palpebrarum.
- CN. Compressor Nasi.
- LLS. Levator Labii Superioris and Nasi.
- Z. Zygomaticus Minor.
- ZM. Zygomaticus Major.
- LAO. Levator Anguli Oris.

DLI. Depressor Labii Inferioris.

DAO. Depressor Anguli Oris.

O. Orbicularis Oris.

B. Buccinator.

M. Masseter.

PM. Platysma-Myoides.

D. Deltoid.

T. Trapezius.

SM. Sterno Mastoid.

SC. Splenius Capitis.

LAS. Levator Anguli Scapulæ.

S. Scalenus.

CH. Situation of the cornu of the Hyoid bone.

P. Space below the ear filled by the Parotid gland.

FIG. 3.

Shewing the Origin and Insertion of the Muscles of the Head, Face, & Neck.

OF. Occipito Frontalis.

A. Anterior Auris.

PA. Posterior Auris.

CS. Corrugator Supercilii.

LLS. Levator Labii Superioris.

LAO. Levator Anguli Oris.

CN. Compressor Nasi.

DLS. Depressor Labii Superioris.

Z. Zygomaticus Minor.

ZM. Zygomaticus Major.

DLI. Depressor Labii Inferioris.

DAO. Depressor Anguli Oris.

LLI. Levator Labii Inferioris.

T. Trapezius.

PLATE X.

FIG. 1.

*Situation of the Cartilages of the Eye
and Nose.*

- T. Tendo Oculi.
- SC. Superior Cartilage of the eyelids.
- IC. Inferior Cartilage of ditto.
- S. Superior lateral nasal cartilage.
- I. Inferior lateral nasal cartilage.

FIG. 2.

*Side View of the Cartilages of the
Nose.*

- SM. Superior Maxillary bone.
- { np. Its nasal process.
- F. Frontal bone.
- N. Nasal bone.
- SLC. Superior Lateral Cartilage.
- ILC. Inferior Lateral Cartilage.

- S. Sesamoid cartilages.
- SC. Cartilage forming part of the septum of the nose.

FIG. 3.

Cartilage of the Ear.

- H. The helix.
- ah. Anti-helix.
- T. Tragus.
- at. Anti-tragus.
- C. Concha.

FIG. 4.

The Eye.

- S. The Sclerotic coat of the eye seen through the transparent Tunica Conjunctiva.
- P. Plica semi-lunaris, a fold of the conjunctiva.
- C. Caruncula lachrymalis.
- P. The pupil seen in the centre of the iris.

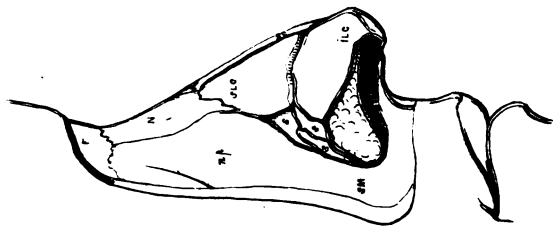


FIG 2.



FIG 1.

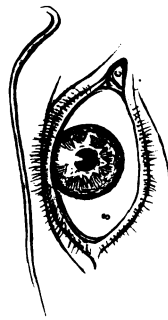


FIG 4



FIC 3.

PLATE 10.

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THE MUSCLES.

HEAD.

Occipito frontalis arises from two external thirds of the superior transverse ridge of the occipital, and from the posterior and external part of the mastoid portion of the temporal bone. It is inserted into the integuments of the brows, the nasal bones, and into the internal angular process of the os frontis. Its use is to elevate the brows, more particularly their outer part, as in terror; and it enables some persons to draw the scalp downwards over the forehead.

Superior auris, or *attollens aurem*, arises from the aponeurosis above the ear, and is inserted into the upper and anterior part of the cartilage, which it raises.

Anterior auris, or *attrahens aurem*, arises from the posterior part of the zygomatic process and cranical aponeurosis. It is inserted into the anterior part of the helix. It draws this part of the ear forwards.

Posterior auris, or *retrahens aurem*, arises from the mastoid process above the sterno-mastoideus, and is inserted into

the back part of the concha. It enlarges the external opening of the ear by drawing the concha backwards.

FACE.

Orbicularis palpebrarum arises from the internal angular process of the os frontis and upper edge of the tendo-oculi, encircles the eye; is inserted into the lower margin of the tendo-oculi, and into the nasal process of the superior maxillary bone. A fasciculus of this muscle, which passes from the margin of the tendo-oculi over the lower eyelid, and is lost in the integuments covering it, by some anatomists is described as a distinct muscle—the palpebralis. The use of the orbicularis palpebrarum is to close the eyelids, as in laughter. They are closed during sleep by relaxation of the muscles belonging to the eyelids. Some of the lower fibres of this muscle will also raise the cheek, and those which pass under the outer part of the eyebrow draw it downwards.

Corrugator supercilii arises from the internal angular process of the os frontis, and is inserted into the integuments of the eyebrow; it is joined by some fibres to the occipito-frontalis and orbicularis palpebrarum muscles; it draws the eyebrows downwards and together.

Pyramidalis nasi arises from the occipito-frontalis, passes down, and is inserted into the expansion of the compressor nasi on the dorsum of the nose. It will raise the integuments on the back of the nose, as in scorn.

Compressor nasi arises from the canine fossa of the superior maxillary bone, and is inserted into an aponeurosis, which covers the dorsum of the nose. Its use is to compress the ala of the nose.

Levator labii superioris alæque nasi arises from the upper extremity of the nasal process of the superior maxillary bone, and from the lower margin of the orbit above the infra-orbital hole. It is inserted into the alæ nasi, the integuments of the upper lip, and into the orbicularis oris. Its use is to draw up the nostrils and upper lip, as in terror.

Zygomaticus major arises from the lower part of the malar bone, near the zygomatic suture. It is inserted into the angle of the mouth. It will draw the angle of the mouth upwards and outwards, as in grinning, or excessive laughter.

Zygomaticus minor is superior and anterior to the last. It arises from the upper part of the malar bone, and is inserted into the integuments at the commissure of the lips. It is used to draw the angles of the mouth upwards and outwards. There is frequently only one zygomatic muscle on each side.

Levator anguli oris arises from the canine fossa, below the infra-orbital foramen, above the first molar tooth, and is inserted into the orbicularis oris muscle, and the commissure of the lips, which it raises.

Depressor labii superioris alæque nasi arises from the alveoli of the canine and incisor teeth of the superior maxillary bone, and is inserted into the integuments of the upper lip, and into the septum and alæ nasi. It depresses the upper lip and nostrils, as in shaving.

Depressor anguli oris arises from the external oblique line on the lower jaw, and is inserted into the commissure of the lips, which it depresses, as in the expression of scorn.

Depressor labii inferioris, or *quadratus menti*, arises from the front of the lower maxillary bone, near the median line, and is inserted into the lower lip and orbicularis oris muscle. It draws the lower lip directly down, as in terror.

Levator labii inferioris arises from the alveoli of the incisor teeth of the lower jaw, by the side of the symphysis, and is inserted into the integuments of the chin. It raises the lower lip, as in scorn.

Orbicularis oris surrounds the opening of the mouth by two fleshy fasciculi at the commissure of the lips. This muscle is interlaced with all the muscles which are inserted there. Its use is to oppose the action of these muscles, and to compress the lips, as in suction.

Buccinator arises from the two last alveoli of the superior maxilla and posterior alveoli of the lower jaw, also from the intermaxillary ligament. It is inserted into the commissure of the lips, and is intimately connected with the orbicularis oris. Its use is to retract the commissure; and when opposed by the orbicularis oris, it compresses the cheek, and in this way is used to expel the breath, as in blowing wind instruments.

Masseter arises from the inferior part of the zygomatic arch, and is inserted into the outer side of the angle and ramus of the lower jaw. This muscle is used in mastication. When the teeth are brought forcibly together, it increases the hollow of the cheek.

Temporalis arises from the side of the cranium, beneath the semicircular ridge on the parietal bone, from the temporal fossa, and from the aponeurosis which covers it. It is inserted into the coronoid process of the lower jaw. This is not a muscle of expression.

NECK.

Platysma-myoides arises in the cellular membrane covering the upper and outer part of the deltoid and pectoralis major muscles ; some fibres also adhere to the clavicle. It is inserted into the integuments of the chin, the fascia covering the side of the inferior maxillary bone, to which it is slightly attached : it may also be traced upwards, on the cheek, to the anterior part of the external ear ; some fibres join the orbicularis palpebrarum, and others are inserted into the integuments at the commissure of the lips, forming the *Risorius Santorini*. These fibres draw down the cheek in terror : it also gives support to the subjacent parts of the neck.

Sterno-mastoideus arises from the upper and anterior part of the first bone of the sternum, and from the sternal third of the clavicle. It is inserted into the upper part of the mastoid process of the temporal bone, and into the external third of the superior transverse ridge of the occipital bone. Its use is to rotate the head.

Sterno-hyoideus arises from the posterior surface of the sternum, the cartilage of the first rib, from the sternal end of the clavicle and sterno-clavicular articulation. It is inserted into the lower border of the os hyoides. Its use is to depress the larynx.

Sterno-thyroideus arises from the posterior surface of the sternum, also from the cartilage of the second rib, and is inserted into the oblique line on the ala of the thyroid cartilage. It depresses the larynx.

Omo-hyoideus arises behind the semilunar notch in the superior costa of the scapula. It is inserted into the lower

border of the os hyoides, at the junction between its body and greater cornu. It depresses the larynx.

The *scaleni* arise from the transverse processes of five lower cervical vertebræ, and are inserted into the two upper ribs.

ARM.

Pectoralis major arises from the sternal half of the clavicle from the anterior part of the sternum, the third, fourth, fifth, and sixth costal cartilages, and from an aponeurosis common to it and the external oblique. It is inserted into the anterior edge of the bicipital groove by a flat tendon, and connected to the fascia of the fore-arm by an aponeurosis.

Serratus magnus arises by nine digitations from the nine upper ribs, and is inserted into the base of the scapula, more particularly into the superior and inferior angles.

Trapezius arises from the internal third of the superior transverse ridge of the occipital bone, the ligamentum nuchæ, the last cervical, and all the dorsal vertebræ. It is inserted into the posterior border of the external third of the clavicle, from the acromion process, and from the superior edge of the spine of the scapula. The insertion of this muscle corresponds to the origin of the deltoid.

Latissimus dorsi arises from the six inferior dorsal spinous processes, from all the dorsal spines, from the back of the sacrum, the posterior third of the crest of the ilium, and from the three inferior ribs. It is inserted into the inner edge of the bicipital groove, above and in front of the *teres major*.

Levator anguli scapulæ, arises from the transverse pro-

cesses of the four or five superior cervical vertebræ, and is inserted into the base of the scapula, between its spine and superior angle.

Splenius capitis arises from the spines of three inferior cervical and two superior dorsal vertebræ, also from the ligamentum nuchæ; and is inserted into the back part of the mastoid process, and into the occipital bone below its superior transverse ridge.

Sacro-lumbalis longissimus dorsi and *spinalis dorsi* are situated under the *latissimus dorsi*: they are seen through it in muscular subjects.

Sacro-lumbalis arises from the posterior third of the crest of the ilium, from the back of the sacrum, the sacro-iliac ligaments, the transverse and oblique processes of the lumbar vertebræ. It is inserted into all the ribs near their angles.

Longissimus dorsi arises from the posterior surface of the sacrum, the transverse and oblique processes of the lumbar vertebræ. It is inserted into all the dorsal vertebræ and ribs, between their angles and tubercles.

Spinalis dorsi arises from the two superior lumbar and three inferior dorsal spines. It is inserted into nine superior dorsal spines. These three muscles bend the trunk backwards.

Obliquus externus, or *descendens*, arises from the external surfaces of eight or nine inferior ribs, at a little distance from their cartilages; the five superior indigitate with the digitations of the *serratus magnus*, the three inferior with the *latissimus dorsi*. At a little distance external to the *linea semilunaris* this muscle ends in a broad tendon, which passes over the anterior part of the abdomen.

and is inserted into the ensiform cartilage, the linea alba, the pubis, and the anterior superior spinous process of the ilium. Between this process and the pubis it is stretched, and thus forms Poupart's ligament. It is also inserted tendinous and fleshy into the outer edge of the two anterior thirds of the crest of the ilium; at the pubic insertion of this muscle, the spermatic cord, passing from the testicle into the abdomen, pierces this tendon at its pubic insertion. The linea alba and lineæ semilunares are partly formed by its tendon. The linea alba is a dense ligamentous cord, extending from the ensiform cartilage to the pubis; the linea semilunaris extends from the tuberosity at the pubis on each side towards the cartilage of the eighth or ninth ribs, at about four inches from the linea alba. This muscle is used to compress the abdominal viscera; it will also bend the body to one side. If that on the opposite side acts at the same time, the trunk is bent forwards.

Rectus arises from the upper and anterior part of the pubis, and is inserted into the ensiform cartilage and costoxiphoid ligament, the cartilages of the fifth and sixth ribs. This muscle is intersected by three or four transverse lines; one is always opposite the umbilicus, one at the ensiform or xiphoid cartilage, and another midway between these two; if a fourth is found, which is seldom the case, it is below the umbilicus. By means of these tendinous intersections this muscle is enabled to contract in separate portions, so as to compress the viscera of the abdomen in succession. It will also bend the trunk forwards.

Pyramidalis arises broad from the pubis, and is inserted into the linea alba midway to the umbilicus. It is

often wanting. It assists the rectus, and makes tense the linea alba.

Psoas magnus arises from the sides of the bodies of the two last dorsal, and from the bodies and transverse processes of all the lumbar vertebræ; also from the intervertebral ligaments. It is inserted into the inferior part of the lesser trochanter, and into the ridge below that process.

Iliacus internus arises from the transverse process of the last lumbar vertebra, from the inner margin of three anterior fourths of the *crista ilii*, and its two anterior spinous processes; also from the notch between them, from the brim of the acetabulum and capsular ligament, from the iliac fossa and fascia. It joins the *psoas magnus*, and is also inserted into the anterior and inner surface of the femur, below the trochanter minor.

The use of the two last described muscles is to flex the thigh; they will also rotate it outwards.

Deltoides arises from the lower edge of the spine of the scapula, from the anterior edge of the acromion process, and from the external third of the clavicle. It is inserted into the rough surface on the outer and middle part of the humerus, between the origin of the *brachialis anticus*. Its use is to raise the arm upwards and outwards; if the anterior fibres act, they can move the arm forwards, or rotate it inwards; if the posterior fibres, they will move it backwards, or rotate it outwards.

Teres major arises from a rough surface on the inferior costa of the scapula, and is inserted into the posterior or inner edge of the bicipital groove behind the *latissimus dorsi*, and generally extends lower down than it. It is used to draw the arm downwards, backwards, and inwards;

when raised, it will rotate the humerus inwards, and, if the humerus is fixed, draw the inferior angle of the scapula towards the humerus, as in climbing.

Infra spinatus arises from the back of the scapula below its spine, and is inserted into the upper part of the great tuberosity of the humerus. It assists other muscles to keep the head of the humerus in the glenoid cavity of the scapula.

Teres Minor arises between two ridges on the inferior costa of the scapula, and is inserted into a depression on the lower part of the great tuberosity of the humerus. Its use is to strengthen the shoulder joint, and rotate the arm outwards.

Coraco-brachialis arises from the point of the coracoid process, and from the short head of the biceps. It is inserted on the inner side of the humerus, about its middle, and by an aponeurosis into the ridge which leads to the internal condyle. It will raise and draw the arm forwards and inwards, also rotate it slightly outwards.

Biceps arises by two heads; the long head arises from the upper edge of the glenoid cavity of the scapula, the short head from the point of the coracoid process with the coraco-brachialis. The long head passes over the head of the humerus within the capsular ligament; it then passes downwards in the bicipital groove, and joins the short head a little below the middle of the arm. They are inserted into the back part of the tubercle of the radius, and by a strong fascia, which joins the fascia of the fore-arm, covering the flexor and pronator muscles. It will flex the fore-arm, draw it forwards, and make tense the fascia.

Brachialis anticus arises from the outer and middle part

of the humerus by two slips on each side of the insertion of the deltoid muscle, and from the anterior surface of the humerus as far as the condyles. It is inserted into the coronoid process of the ulna and rough surface beneath it. It is a direct flexor of the fore-arm.

Triceps arises by three heads; the middle or long head arises from the lower part of the neck of the scapula, and from the anterior part of the inferior costa immediately below it; the second, or external head, arises from humerus below the insertion of the teres minor; the third, internal and shortest, arises from a ridge leading to the internal condyle below the insertion of the teres major. The three heads join about the middle of the arm, and are inserted into the olecranon process of the ulna; it is also connected to the fascia on the posterior part of the fore-arm. Its use is to extend the fore-arm, and by its long head to assist in drawing it backwards.

Pronator radii teres arises from the anterior part of the internal condyle, the fascia of the fore-arm, the intermuscular septa, and from the coronoid process of the ulna. It is inserted into the outer and back part of the radius about its centre. It is a flexor of the fore-arm, and pronates the hand, by drawing the radius forwards over the ulna.

Flexor carpi radialis arises from the inner condyle and intermuscular septa. It is inserted into the anterior part of the metacarpal bone of the index finger at its base. It is a flexor of the hand, assisting also as a pronator.

Palmaris longus arises also from the internal condyle and intermuscular septa; being inserted into the palmar aponeurosis near the thumb, and into the annular ligament. It makes tense the palmar fascia, and is a flexor of the hand.

Flexor carpi ulnaris arises from the internal condyle, from the inner side of the olecranon process, and nearly the whole inner side of the ulna; also from the fascia of the fore-arm. It is inserted into the pisiform bone, and anterior part of the fifth metacarpal bone at its base. It is an adductor and flexor of the hand.

Flexor sublimis perforatus arises from the internal condyle, the internal lateral ligament, the coronoid process of the radius, and from the radius below its tubercle. It is split at the point between the first and second phalanx of each finger, giving passage to the flexor profundus; and is inserted into the anterior part of the second phalanx of each finger. Its use is to flex the fore-arm, hand, and second phalanx of the fingers.

Flexor profundus perforans arises from the three upper fourths of the anterior surface of the ulna, the internal half of the interosseous ligament, and sometimes from the radius below its tubercle. It is inserted into the last phalanx of each finger. Its use is to flex the hand and last phalanges of the fingers.

Flexor longus pollicis arises from the fore part of the radius below its tubercle, and from the interosseous membrane, to within two inches of the carpus; sometimes it arises from the coronoid process. The tendon, passing between the two heads of the flexor brevis pollicis, is inserted into the last phalanx of the thumb. Its use is to flex the last phalanx of the thumb, and assist the flexors of the hand.

Supinator radii longus arises from the ridge on the outer part of the humerus leading to the external condyle, to within two inches of the joint, and from the intermuscular

ligament which separates it from the second head of the triceps. It is inserted into the rough surface on the outer and lower part of the radius, near the styloid process. Its use is to roll the radius backwards, and thus to supinate the hand; it will also flex the fore-arm.

Extensor carpi radialis longus arises from the ridge on the outer part of the humerus, between the supinator longus and external condyle. It is inserted into the back part of the metacarpal bone of the index finger at its carpal extremity. It bends the hand backwards, and adducts it slightly.

Extensor carpi radialis brevis arises from the inferior and posterior part of the external condyle; also from the external lateral ligament. It is inserted into the back part of the metacarpal bone of the middle finger at its carpal extremity. Its use is nearly similar to the last.

Extensor communis digitorum arises from the external condyle, the fascia of the fore-arm, the intermuscular septa, and from the ulna. It is inserted into the posterior part of the phalanges of the fingers. It extends the hand and fingers.

Extensor minimi digiti arises in common with the extensor communis, and, having united with the fourth tendon of the latter muscle, it is inserted into the posterior part of the phalanges of the little finger, by which means this finger is able to be extended independent of the others.

Extensor carpi ulnaris also arises from the external condyle, fascia, intermuscular septa, and ulna. It is inserted into the carpal end of the fifth metacarpal bone. Its use is to adduct and bend the hand backwards.

Anconæus arises from the posterior and external surface

of the external condyle and lateral ligament, and is inserted into the olecranon process, and superior fifth of the posterior surface of the ulna.

Extensor ossis metacarpi pollicis, or *abductor longus*, arises from the middle and posterior part of the ulna below the anconæus muscle, from the interosseous ligament, and from the posterior part of the radius below the supinator brevis. It is inserted by two tendons, one into the os trapezium, the other into the upper and back part of the metacarpal bone of the thumb. Its use is to extend and abduct the metacarpal bone of the thumb.

Extensor primi internodii pollicis arises from the back part of the ulna below its middle, the interosseous ligament, also from the radius, and is inserted into the posterior part of the first phalanx. Its use is to extend the first phalanx.

Extensor secundi internodii pollicis arises from the ulna above its middle, and from the interosseous membrane. It is inserted into the posterior part of the last phalanx, which it extends.

Extensor indicis, or *indicator*, arises from the middle of the posterior surface of the ulna and interosseous membrane. Having joined the tendon of the extensor communis going to the fore finger, it is inserted into the posterior part of its second and third phalanges. Its use is to point the finger.

Palmaris brevis arises from the palmar fascia and annular ligament, passes inwards, and is inserted into the integuments on the inner side of the hand, which it contracts, drawing them nearer to the thumb.

Abductor pollicis arises from the anterior part of the annular ligament, from the os naviculare, and trapezium.

It is inserted into the outer part of the base of the first phalanx, and, by an expansion, into the second. It separates the thumb from the fingers.

Opponens pollicis arises from the os naviculare and annular ligament, and is inserted into the front part of the metacarpal bone of the thumb. It draws the thumb towards the fingers.

Flexor brevis pollicis arises by two heads; the external and anterior arises from the annular ligament, the trapezium and scaphoid bones. It is inserted into the external sesamoid bone and base of the first phalanx. The internal head arises from the os magnum and base of the metacarpal bone of the middle finger. It is inserted into the base of the first phalanx. Its use is to flex the metacarpal bone and first phalanx.

Abductor indicis arises from the metacarpal bone of the index finger, and from half of the metacarpal bone of the thumb. It is inserted into the outer part of the index finger at its base. It draws this finger from the others, or it will adduct the thumb.

Abductor minimi digiti arises from the pisiform bone and annular ligament. It is inserted into the base of the first phalanx of the little finger, on its ulnar side. The name implies its use.

Flexor brevis minimi digiti arises from the unciform bone and annular ligament. It lies external to the last, and is inserted into the base of the first phalanx of the little finger.

THIGH.

Tensor vaginae femoris arises from the external part of the anterior superior spinous process of the ilium; and is

inserted into a duplicature of the fascia lata on the outer side of the thigh, about three inches below the trochanter major. Its use is to make tense the fascia, to assist in abducting, flexing, and rotating the thigh inwards.

Sartorius arises from the anterior superior spinous process of the ilium, and from the notch beneath it. It is inserted into the inner and upper part of the tibia below its tubercle. Its use is to flex the leg upon the thigh, and the thigh upon the pelvis; also to cross the thighs. Hence its name *sartorius*, or tailor's muscle.

Rectus femoris arises from the anterior inferior spinous process of the ilium, from the superior border of the acetabulum and capsular ligament. It is inserted into the upper edge of the patella and its ligament. It extends the leg, and bends the thigh upon the pelvis.

Vastus externus arises from the root and anterior part of the great trochanter, from the outer edge of the linea aspera and oblique ridge leading to the external condyle, from the external surface of the bone and the fascia lata. It is inserted into the external surface of the tendon of the rectus, the side of the patella, and head of the tibia. Its use is to extend the knee, and rotate the leg outwards.

Vastus internus arises from the anterior part of the femur, the linea intertrochanterica, the inner edge of the linea aspera, and inner side of the femur. It is inserted into the inner side of the rectus, patella, and head of the tibia. It will extend the leg, and slightly turn it inwards.

Cruræus arises from the anterior and external part of the femur, commencing at the intertrochanteric line, extending along three-fourths of the bone, and as far outwards as the linea aspera. It is inserted into the upper and outer

edge of the patella, and synovial membrane of the knee joint. It assists the vasti and rectus in extending the leg.

Gracilis arises from the lower half of the symphysis and inner edge of the descending ramus of the pubis. It is inserted behind and below the tendon of the sartorius into the internal part of the head of the tibia. It bends the knee, and turns it inwards, and also is an adductor of the thigh.

Pectinæus arises from the linea ileo pectinæa on the horizontal ramus of the pubis, and is inserted into the rough ridge leading from the lesser trochanter to the linea aspera. It is an adductor, flexor, and rotator of the thigh outwards.

Adductor longus arises from the anterior surface of the pubis, between its spine and symphysis. It is inserted into the middle third of the linea aspera.

Adductor brevis arises from the anterior inferior surface of the pubis, between the obturator foramen and symphysis. It is inserted into the superior third of the internal root of the linea aspera, extending to about three inches below the lesser trochanter. It lies behind the adductor longus.

Adductor magnus arises from the anterior surface of the descending ramus of the pubis, the ramus of the ischium, and from the external margin of its tuberosity. It is inserted into the whole length of the linea aspera, and extends from the great trochanter to the internal condyle. These three adductor muscles are rotators of the thigh outwards, and steady the pelvis on it; the adductor longus and brevis will also flex the thigh, and the adductor magnus will extend when it has been previously flexed.

Glutæus maximus arises from the posterior fifth of the crest and rough surface between it and the superior semi-

circular ridge on the dorsum of the ilium, from the posterior ileo-sacral ligaments, the lumbar fascia, the back of the sacrum, the side of the coccyx, and great sacro sciatic ligament. It is inserted into the rough ridge leading from the great trochanter to the linea aspera, the superior third of the linea aspera, and into the fascia lata, which covers the vastus externus muscle. Its use is to extend, abduct, and rotate the thigh outwards, to support the pelvis on the thigh, and make tense the fascia lata.

Glutæus medius arises from three anterior fourths of the crest of the ilium, from the semicircular ridge, which leads to the anterior superior spinous process, and from the surface of the bone above and below this ridge; also, from the dense fascia which covers it. It is inserted into the outer and upper part of the great trochanter, and anteriorly to the tendon of the glutæus minimus. Its use is to abduct the thigh and support the pelvis. Its anterior fibres can flex and rotate the thigh inwards. Its posterior fibres will extend and rotate it outwards.

Biceps flexor cruris arises by two heads. The long head arises with the semitendinosus from the outer and back part of the tuberosity of the ischium; the short head arises from the linea aspera, below the insertion of the glutæus maximus, to within two inches of the external condyle; they join at the inferior third of the thigh, and are inserted into the head of the fibula. Its use is to flex the leg, by the attachment of the long head to the pelvis; it can also extend the thigh, and rotate the whole limb outwards.

Semitendinosus arises from the upper and outer part of the tuberosity of the ischium, with the long head of the biceps. It is inserted inferior and posterior to the tendons of the

sartorius and gracilis; into the tibia, on its anterior and internal part, below the tuberosity. Its use is to flex the knee, rotate the leg inwards, extend the thigh, and support the pelvis.

Semimembranosus arises from the upper and outer part of the tuber ischii, and is inserted into the external condyle of the femur, also into the heads of the tibia and fibula. Its use is to extend the thigh, support the pelvis, flex and rotate the leg inwards.

Tibialis anticus arises from the outer part of two superior thirds of the tibia, the head of the fibula, the inner half of the interosseous ligament, the fascia of the leg, and from the intermuscular septa. It is inserted into the inner side of the internal cuneiform and base of the first metatarsal bones. Its use is to flex and adduct the foot, and raise its inner edge from the ground.

Extensor digitorum longus arises from the external part of the head of the tibia, the head and about three-fourths of the fibula, the interosseous ligament, the fascia of the leg, and from the intermuscular septa. It is inserted into the last phalanx of the four external toes. Its use is to flex the foot, and extend the toes into which it is inserted.

Peroneus tertius arises from the anterior aspect of the lower half of the fibula. It is inserted into the base of the fifth metatarsal bone; it also sends some fibres to join that tendon of the extensor communis which goes to the little toe. Its use is to abduct and raise the foot; it assists to flex the foot, and extend the little toe.

Peroneus longus arises from the head of the tibia, the head and upper half of the external angle of the fibula, also from the fascia and intermuscular septa. It is inserted

into the internal cuneiform and base of the second metatarsal bones, and outer side of the metacarpal bone of the great toe and adjacent sesamoid bone. Its use is to press the ball of the great toe against the ground, as in walking, and turn the foot outwards.

Peroneus brevis arises from the outer and back part of the lower half of the fibula and the intermuscular septa. It is inserted into cuboid and base of the metacarpal bone of the little toe. It assists the peroneus longus.

Gastrocnemius arises by two heads, an internal and external; the internal, and largest, arises from the upper and back part of the internal condyle of the femur, and from the ridge leading from it to the linea aspera; the external head arises behind the external condyle below the plantaris.

The *soleus*, which this muscle joins, to form the tendo-achillis, also arises by two heads; the external arises from the back part of the head, and superior third of the fibula; the internal, from the oblique line on the tibia, below the insertion of the popliteus. These two muscles join about the middle third of the leg, and form the tendo-achillis, which is inserted into the lower and back part of the os calcis. These muscles raise the heel, as in walking; the gastrocnemius will also flex the leg.

Plantaris arises from the back part of the femur, above the external condyle and posterior ligament of the knee joint; it ends in a very delicate tendon, which is inserted into the posterior part of the os calcis anterior to the tendo-achillis, and into the plantar fascia. Its use is to flex the leg, extend the foot, and make the plantar fascia tense.

Flexor digitorum longus arises from the posterior flat sur-

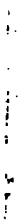
face of the tibia, below the oblique ridge, to within three inches of the ankle, from the fascia and intermuscular septa. It is inserted into the last phalanx of the four lesser toes. Its use is to flex the toes and extend the foot.

Flexor pollicis longus arises from two inferior thirds of the fibula on its posterior surface. It is inserted into the last phalanx of the great toe. Its use is to flex the great toe, abduct and extend the foot.

Adductor pollicis arises from the lower and internal part of the os calcis, the internal annular ligament, the plantar fascia, and intermuscular septa. It is inserted into the internal sesamoid bone and base of the first phalanx of the great toe. Its use is to adduct the great toe, drawing it from the others.

Abductor minimi digiti arises from the outer side of the os calcis and ligament extending from the os calcis to the outer side of the fifth metacarpal bone, from the plantar fascia, and base of the fifth metatarsal bone. It is inserted into the base of the first phalanx of the little toe, which it will abduct and slightly flex.

Extensor digitorum brevis arises from the upper and anterior part of the os calcis, the astragalus, the cuboid bone, and annular ligament; it ends in four tendons, there being none for the little toe, which pass on the outer side of the extensor tendons of the toes, and join them, except the one going to the great toe, which is inserted into the base of its first phalanx. Its use is to extend the toes and abduct the anterior part of the foot.





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